30. (a) ±8 ft/s, depending on interpretation. Best to say the “tip moves toward the streetlight at 8 ft/s.”

(b) −3 ft/s, or “shadow is shrinking at 3 ft/s.”

32. (a) −2 s⁻¹. (The pictured angle is clearly decreasing.)

(b) ±1 s⁻¹, depending on your definition of “camera angle”. If, after the car passes, you define it as the positive angle between perpendicular and line-of-sight, then the angle is increasing. However, if you define it as the angle to line-of-sight, measured clockwise from perpendicular, then θ is negative and getting more negative, thus decreasing.

34. 80 mi/hr.

36. \(-\frac{54}{\pi \sqrt{5}} \approx -8\) deg/sec.

38. 29.5 knots.